

Int B2

SEQUENCE LISTING

<110> Arnold, Frances H.
Joo, Hyun
Lin, Zhanglin

<120> Oxygenase Enzymes and Screening Method

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<140> 09/246,451
<141> 1999-02-09

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35 40 45
Asn Val Pro Asp Leu Val Trp Thr Arg Cys Asn Gly Gly His Trp Ile
50 55 60
Ala Thr Arg Gly Gln Leu Ile Arg Glu Ala Tyr Glu Asp Tyr Arg His
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Phe Ser Ser Glu Cys Pro Phe Ile Pro Arg Glu Ala Gly Glu Ala Tyr
85 90 95
Asp Phe Ile Pro Thr Ser Met Asp Pro Pro Glu Gln Arg Gln Phe Arg
100 105 110
Ala Leu Ala Asn Gln Val Val Gly Met Pro Val Val Asp Lys Leu Glu
115 120 125
Asn Arg Ile Gln Glu Leu Ala Cys Ser Leu Ile Glu Ser Leu Arg Pro
130 135 140
Gln Gly Gln Cys Asn Phe Thr Glu Asp Tyr Ala Glu Pro Phe Pro Ile
145 150 155 160
Arg Ile Phe Met Leu Leu Ala Gly Leu Pro Glu Glu Asp Ile Pro His
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Leu Lys Tyr Leu Thr Asp Gln Met Thr Arg Pro Asp Gly Ser Met Thr
180 185 190
Phe Ala Glu Ala Lys Glu Ala Leu Tyr Asp Tyr Leu Ile Pro Ile Ile
195 200 205
Glu Gln Arg Arg Gln Lys Pro Gly Thr Asp Ala Ile Ser Ile Val Ala
210 215 220
Asn Gly Gln Val Asn Gly Arg Pro Ile Thr Ser Asp Glu Ala Lys Arg
225 230 235 240
Met Cys Gly Leu Leu Leu Val Gly Gly Leu Asp Thr Val Val Asn Phe
245 250 255
Leu Ser Phe Ser Met Glu Phe Leu Ala Lys Ser Pro Glu His Arg Gln

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Leu	Arg	Arg	Phe	Ser	Leu	Val	Ala	Asp	Gly	Arg	Ile	Leu	Thr	Ser	Asp		
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Tyr	Glu	Phe	His	Gly	Val	Gln	Leu	Lys	Lys	Gly	Asp	Gln	Ile	Leu	Leu		
305					310					315					320		
Pro	Gln	Met	Leu	Ser	Gly	Leu	Asp	Glu	Arg	Lys	Asn	Ala	Cys	Pro	Met		
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His	Val	Asp	Phe	Ser	Arg	Gln	Lys	Val	Ser	His	Thr	Thr	Phe	Gly	His		
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Phe	Ser	Ser	Glu	Cys	Pro	Phe	Ile	Pro	Arg	Glu	Ala	Gly	Glu	Ala	Tyr		
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Ala	Leu	Ala	Asn	Gln	Val	Val	Gly	Met	Pro	Val	Val	Asp	Lys	Leu	Glu		
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Leu	Lys	Tyr	Leu	Thr	Asp	Gln	Met	Thr	Arg	Pro	Asp	Gly	Ser	Met	Thr		
	180						185						190				
Phe	Ala	Glu	Ala	Lys	Glu	Ala	Leu	Tyr	Asp	Tyr	Leu	Ile	Pro	Ile	Ile		
	195					200					205						
Glu	Gln	Arg	Arg	Gln	Lys	Pro	Gly	Thr	Asp	Ala	Ile	Ser	Ile	Val	Ala		

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225	Met Cys Gly Leu	230	Leu Leu Val Gly Gly Leu	235	Asp Thr Val Val Asn Phe
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Leu Ser Phe Ser	Met Glu Phe Leu Ala Lys Ser Pro Glu His Arg Gln				
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Glu Leu Ile Glu Arg Pro Glu Leu Ile Pro Ala Ala Cys Glu Glu Leu					
	275		280		285
Leu Arg Arg Phe Ser Leu Val Ala Asp Gly Arg Ile Leu Thr Ser Asp					
	290		295		300
Tyr Glu Phe His Gly Val Gln Leu Lys Lys Gly Asp Gln Ile Leu Leu					
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	325		330		335
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Gly Ser His Leu Cys Leu Gly Gln His Leu Ala Arg Arg Glu Ile Ile					
	355		360		365
Val Thr Leu Lys Glu Trp Leu Thr Arg Ile Pro Asp Phe Ser Ile Ala					
	370		375		380
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	405		410		

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Asn Val Pro Asp Leu Val Trp Thr Arg Cys Asn Gly Gly His Trp Ile	
	50 55 60
Ala Thr Arg Gly Gln Leu Ile Arg Glu Ala Tyr Glu Asp Tyr Arg His	
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Phe Ser Ser Glu Cys Pro Phe Ile Pro Arg Glu Ala Gly Glu Ala Tyr	
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Asp Phe Ile Pro Thr Ser Met Asp Pro Pro Glu Gln Arg Gln Phe Arg	
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Ala Leu Ala Asn Gln Val Val Gly Met Pro Val Val Asp Lys Leu Glu	
	115 120 125
Asn Arg Ile Gln Glu Leu Ala Cys Ser Leu Ile Glu Ser Leu Arg Pro	
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Gln Gly Gln Cys Asn Phe Thr Glu Asp Tyr Ala Glu Pro Phe Pro Ile	
145	150 155 160
Arg Ile Phe Met Leu Leu Ala Gly Leu Pro Glu Glu Asp Ile Pro His	

Leu	Lys	Tyr	Leu	165	Thr	Asp	Gln	Met	Thr	170	Arg	Pro	Asp	Gly	Ser	175	Met	Thr
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Glu	Gln	Arg	Arg	Gln	Lys	Pro	Gly	Thr	Asp	Ala	Ile	Ser	Ile	Val	Ala			
		210				215							220					
Asn	Gly	Gln	Val	Asn	Gly	Arg	Pro	Ile	Thr	Ser	Asp	Glu	Ala	Lys	Arg			
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Met	Phe	Gly	Leu	Leu	Leu	Val	Gly	Gly	Leu	Asp	Thr	Val	Val	Asn	Phe			
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Leu	Ser	Phe	Ser	Met	Glu	Phe	Leu	Ala	Lys	Ser	Pro	Glu	His	Arg	Gln			
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Glu	Leu	Ile	Glu	Arg	Pro	Glu	Arg	Ile	Pro	Ala	Ala	Cys	Glu	Glu	Leu			
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Leu	Arg	Arg	Phe	Ser	Leu	Val	Ala	Asp	Gly	Arg	Ile	Leu	Thr	Ser	Asp			
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Tyr	Glu	Phe	His	Gly	Val	Gln	Leu	Lys	Lys	Gly	Asp	Gln	Ile	Leu	Leu			
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Pro	Gln	Met	Leu	Ser	Gly	Leu	Asp	Glu	Arg	Lys	Asn	Ala	Cys	Pro	Met			
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His	Val	Asp	Phe	Ser	Arg	Gln	Lys	Val	Ser	His	Thr	Thr	Phe	Gly	His			
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Gly	Ser	His	Leu	Cys	Leu	Gly	Gln	His	Leu	Ala	Arg	Arg	Glu	Ile	Ile			
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Val	Thr	Leu	Lys	Glu	Trp	Leu	Thr	Arg	Ile	Pro	Asp	Phe	Ser	Ile	Ala			
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Pro	Gly	Ala	Gln	Ile	Gln	His	Lys	Ser	Gly	Ile	Val	Ser	Gly	Val	Gln			
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Ala	Leu	Pro	Leu	Val	Trp	Asp	Pro	Ala	Thr	Thr	Lys	Ala	Val					
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cacttccatg actgcttcgt gaatggttgc gacgctagca tattactgga caacaccacc 180
agtttccgca ctgaaaagga tgcattcggg aacgctaaca gcgccagggg ctttccagtg 240
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35 40 45
Gly Cys Asp Ala Ser Ile Leu Leu Asp Asn Thr Thr Ser Phe Arg Thr
50 55 60
Glu Lys Asp Ala Phe Gly Asn Ala Asn Ser Ala Arg Gly Phe Pro Val
65 70 75 80
Ile Asp Arg Met Lys Ala Ala Val Glu Ser Ala Cys Pro Arg Thr Val
85 90 95
Ser Cys Ala Asp Leu Leu Thr Ile Ala Ala Gln Gln Ser Val Thr Leu
100 105 110
Ala Gly Gly Pro Ser Trp Arg Val Pro Leu Gly Arg Arg Asp Ser Leu
115 120 125
Gln Ala Phe Leu Asp Leu Ala Asn Ala Asn Leu Pro Ala Pro Phe Phe
130 135 140
Thr Leu Pro Gln Leu Lys Asp Ser Phe Arg Asn Val Gly Leu Asn Arg
145 150 155 160
Ser Ser Asp Leu Val Ala Leu Ser Gly Gly His Thr Phe Gly Lys Asn
165 170 175
Gln Cys Arg Phe Ile Met Asp Arg Leu Tyr Asn Phe Ser Asn Thr Gly
180 185 190
Leu Pro Asp Pro Thr Leu Asn Thr Thr Tyr Leu Gln Thr Leu Arg Gly

Leu	Cys	Pro	Leu	Asn	Gly	Asn	Leu	Ser	Ala	Leu	Val	Asp	Phe	Asp	Leu
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Arg	Thr	Pro	Thr	Ile	Phe	Asp	Asn	Lys	Tyr	Tyr	Val	Asn	Leu	Glu	Glu
225					230					235					240
Gln	Lys	Gly	Leu	Ile	Gln	Ser	Asp	Gln	Glu	Leu	Phe	Ser	Ser	Pro	Asp
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Ala	Thr	Asp	Thr	Ile	Pro	Leu	Val	Arg	Ser	Phe	Ala	Asn	Ser	Thr	Gln
			260					265					270		
Thr	Phe	Phe	Asn	Ala	Phe	Val	Glu	Ala	Met	Asp	Arg	Met	Gly	Asn	Ile
		275					280					285			
Thr	Pro	Leu	Thr	Gly	Thr	Gln	Gly	Gln	Ile	Arg	Leu	Asn	Cys	Arg	Val
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